

COLEOPTERISTS NEWSLETTER

(C. W. O'Brien, editor)

TECHNIQUE FOR THE STUDY OF IMMATURE COLEOPTERA IN GLYCERINE

The study of larvae has always been impaired by problems with techniques. Generally specimens are studied either in a solution of alcohol or mounted in Canada balsam. Studies in alcohol do not yield much information on chaetotaxy and microsculpture and it is hard to study the specimen in temporary fixed positions because the liquid lacks viscosity and the specimen floats about. In Canada balsam more details are obtained, but the position of the specimen is permanently fixed. More recently the critical drying point technique offered an excellent method for studying a rare larva, especially under SEM. Despite these techniques, studying larvae remains slow and difficult, especially if one tries to work at the species level with populations. Moreover, it is obvious that larvae must be studied at high power (100 to 500x) to yield large numbers of characters, including small ones. This can be easily achieved with SEM, but at what price when one works with populations!

The best and least expensive alternative is the study of cleared specimens at low power through a stereo or compound microscope. In the following method one can not only have the resolution of balsam-mounted specimens but also can study any angle with nearly as much ease as with adults. Indeed, I can study 20 species with as many as 20-50 samples with up to 10 small larvae per sample. The basic principle of the method is to clear the larval tissues in KOH, then to impregnate them with glycerine (glycerol) and to study them on a ring slide in glycerine. I use ring slides that are prepared by gluing 2-4 mm thick rings of stable material (plastic or stainless steel) or aluminum (satisfactory if specimens are not stored on slides) to slides. Aluminum rings are easily made on a metal lathe. In my work with medium-sized Carabidae, my rings were 22 mm. in external diameter to match the cover slips. For gluing rings to the slides I prepare a dilute solution of Canada balsam in xylene, then wet one side of the ring and place it on the slide, then let it dry overnight on the slide warming table.

After specimens have been impregnated with glycerine, their handling is nearly as easy and fast as with adults. The positioning is easier than with adults and is faster at low power as no cover slips are necessary. This method works best for prognathous larvae that are at least slightly sclerotized. The best specimens are straight, but curved specimens can be straightened in the glycerine. If you want to insure straight larvae, kill them in near boiling water and leave them there for about five minutes. After study, larvae can be stored in glycerine vials; this is not permanent storage, but is good for at least 2 to 10 years. If specimens are stored in alcohol, they must be reimpregnated with glycerine if studied again.

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Method:

1. Take specimen(s) from alcohol (cleaning them if very dirty) and place them in gently boiling 10% KOH for 3-5 minutes. Large larvae, 10 mm or more, should be punctured at 1-3 spots ventrally.
2. Transfer specimen(s) into distilled water. For all my work I used a staining or solid watch glass with a polished concave surface. This shape is crucial during the evaporating process later on. As bodies collapse easily, in this and remaining steps I use an eye-dropper with a large enough opening to handle the specimen.
3. Change the water three times. Never remove all of the water to avoid collapsing the specimen(s).
4. Prepare a 4% solution of glycerine. Fill the watch glass, then put the specimens in.
5. Let the water evaporate in a dust-free place (I use a drawer) for about three days. Better still, put on a microscope slide warming table at 50-60°C overnight. Insure that specimens are in the lowest part of the watch glass before you leave them.
6. Transfer the specimens to a ring slide with an eye dropper. The ring is then filled to the top with glycerine. If you work at low power (100-300x), specimens can be studied without a cover slip. At higher power I position the specimens with fine forceps under a stereo dissecting microscope, then cover with a cover slip.

The results can be spectacular if absolute cleanliness is maintained throughout the whole procedure.

Henri Goulet
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NOTICE

The *Cooperative College Register* has been re-established as a communications link and matching service for positions and position-seekers for higher education. Write for details. Cooperative College Register, 621 Duke Street, P. O. Box 298-A, Alexandria, VA 22314.

COLEOPTERISTS NEWSLETTER, cont.**COLEOPTERISTS AT C.S.I.R.O.**

E. B. Britton has retired from his position as Curator of Coleoptera for the Australian National Insect Collection, C.S.I.R.O., Canberra. He will continue to live in Canberra and will carry forward some of his personal research projects.

Dr. Britton has been succeeded by J. F. Lawrence, formerly of the Museum of Comparative Zoology, Harvard University.

Other members of the staff on Coleoptera are E. C. Zimmerman, Curator of Weevils, T. A. Weir, and W. Allen. B. P. Moore works part time on Carabidae, and P. B. Carne part time on Scarabaeidae.

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**REORGANIZATION OF THE COLEOPTERA DEPARTMENT
AT THE "PARIS MUSEUM"**

Due to a reorganization in the department of Coleoptera because of the approaching retirement of Mrs. Bons, the responsibilities of personnel have been apportioned in the following manner:

A. VILLIERS, Professeur, Chef du Département: Cerambycidae, Disteniidae, Languriidae.

R. DAJOZ, Maître de conférences: Cucujoidea (except Bostrychidae, Languriidae, Coccinellidae and Endomychidae).

A. DESCARPENTRIES, Maître-Assistant: Buprestidae, Scarabaeidae *s. l.*

J. MENIER, Maître-Assistant: Malacodermoidea, Cleroidea, Dascilloidea (except Buprestidae and Elateridae), Bostrychidae, Scolytidae, and Platypodidae.

MLLE. N. BERTI, Assistante: Chrysomelidae, Coccinellidae, Endomychidae, and Staphyloidea *s. l.*

MLLE. H. PERRIN, Assistante: Curculionoidea, Adepaga *s. l.*

CL. GIRARD, Attaché C.N.R.S.: Heteromeroidea *s. l.*, Elateridae.

You are asked to correspond directly with the individual responsible for the section of your interest or, in case of uncertainty or difficulties, to write directly to Mr. A. Villiers.

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